### INTERMOUNTAIN POWER SERVICE CORPORATION

April 23, 2009

Ms. Cheryl Heying, Director Division of Air Quality Department of Environmental Quality P.O. Box 144820 Salt Lake City, UT 84114-4820

Dear Director Heying:

### **IPSC PSD Final Compliance Report**

Intermountain Power Service Corporation (IPSC) is herein providing information to demonstrate compliance with federally enforceable limits set as conditions within our applicable Title V operating permit and approval order (AO). This report completes the five (5) year monitoring and reporting conditions that were effective during the reporting period:

- Title V Operating Permit #2700010003 (Issued 5/9/2008), Conditions II.B.2.f and II.B.2.g
- AO DAQE-AN0327015-05, Conditions 25 and 26

These conditions require IPSC to prove there were no significant emission increases of pollutants regulated under Prevention of Significant Deterioration (PSD) rules that were attributable to modifications performed by IPSC under AO DAQE-049-02 and the addition of overfire air. The specific PSD requirement implemented by these permits is promulgated as the "WEPCO" rule (see 40 CFR 52.21 and R307-101-2), which requires comparisons of emissions before and after source modifications.

### **Compliance Provisions**

In order to avoid PSD major modification permitting, a modification cannot result in significant emission increases. Under the WEPCO rule, modifications can be permitted as minor if the permittee can represent projections that, all other things equal, post modification actual emissions are predicted to be less than significant increases from the actual emissions prior to the proposed change. IPSC followed this requirement when obtaining the approval to make the permitted modifications.

To show compliance with the WEPCO rule after the modifications have occurred, IPSC must compare two year actual emissions prior to the modification to actual emissions after the modification. If a significant increase in any PSD pollutant emission attributable to the modification is shown to have occurred, IPSC must then undergo a full PSD major modification process for that pollutant.

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WEPCO allows the source to discount those emission increases not attributable to the modification. PSD provisions prevent using decreases when no netting is performed in permitting, as was the case in this particular permitting action. The permitted modifications affecting emissions at IGS are tied to increased heat input for higher generating capacity. Any emission increases not associated with the change can be excluded from the pre- and post-change emission comparison. These excluded emissions can be from non-modification related parameters such as demand growth, changes in fuel quality, operational variability in overall pollution control efficiency, operating hours, or those emissions that could have been otherwise accommodated during the baseline period. None of the modifications were non-routine replacements to accommodate forced outages. Accordingly, IPSC is not prevented to use changes in hours of operation to exclude emissions from either unit at IGS. (See the EPA policy determination letter to Henry V. Nickel on Detroit Edison, 5/23/00.)

### **WEPCO Compliance Analysis**

Presented in Table 1 are the pollutant-by-pollutant compliance determinations as required by permit and the WEPCO rule. The calculations used take into consideration the ability to adjust and discount actual emissions by subtracting emission increases from operational differences not attributable to the modifications. These include adjustments for coal quality, control technology variability, hours of operation, or those emissions that could have been otherwise accommodated during the baseline period. For purposes of the permitting modifications tied to the IGS Dense Pack Project, the positive reducing effects from the use of overfire air must be added back onto the actual compliance period emissions. Since NO<sub>X</sub> is the only pollutant beneficially affected by overfire air (OFA), the adjustments for OFA apply only to it. Table 1 clearly illustrates that the WEPCO test has been met for PSD pollutants applicable to IGS.

### Fuel Quality and Control Variability

Variability in coal characteristics has an ultimate impact on emissions. Fuel parameters such as sulfur, nitrogen, volatiles, ash content, and trace metal concentrations influence the rate and form of the respective emitted counterparts. Pollutant loading also has an impact on the performance of applicable pollution control devices. For instance, higher loading of inlet sulfur compounds to the wet limestone scrubbers, cause a concomitant decrease in overall efficiency when operating at capacity. IPSC has developed from baseline data, the relationship of how changes in fuel quality will affect emissions, particularly for NO<sub>x</sub> and SO<sub>2</sub>.

IPSC is calculating excluded emissions based upon the actual operating data from the baseline period. IPSC has developed curve relationships between coal quality and control device response and changes in actual emissions. In practice, IPSC back calculates, based on this relationship, what the emissions for a given pollutant would have been had that particular fuel been used during the baseline period. Operating parameters from the baseline period, such as heat input, are used to make this calculation to ensure it is distinct from emissions that could be attributable to the modification. The difference from what could have been accommodated during the baseline period if this fuel was used and the actual baseline emission rates are those emissions not related to the change, and are therefore excluded, and thus deductible from any emission increase.

### **Hours of Operation**

Nothing in either the Dense Pack Project or the OFA addition affected the forced outage rate for either IGS Units 1 or 2. IPSC has no history of forced outages due to any equipment

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modified under either permitted action. Thus, variability in year-to-year operating hours is utilized to compare directly that no significant emissions increase from the modifications occurred. As WEPCO dictates, even though the ultimate test is in tons per year comparisons, emissions are reduced to pounds per hour rates, and then calculated back to tons per year using equal hours of operation. This provides a direct measurement indicating any attributable emission increases.

### **Discounted OFA Control**

For purposes of proving WEPCO compliance solely for the Dense Pack Project, IPSC must discount the beneficial NO<sub>x</sub> control aspects of the overfire air system. That is, emission decreases provided by OFA must be added back to the actual emissions to demonstrate that the Dense Pack Project itself did not cause a significant emissions increase of any pollutant. IPSC has substantial operational data to predict the effect of OFA at modified capacities.

### **WEPCO Methodology**

To present consistency in year to year reporting, IPSC is providing an overview of formulae, bases for calculations, and sources of data in the attached spreadsheets. Outlined in them are descriptions of those components used for calculating WEPCO compliance on a plant wide basis as well as unit by unit.

### Conclusion

IPSC has demonstrated that no significant increase has occurred in the required five (5) year monitoring period, for any pollutant as a result of modifications at IGS. This completes the monitoring and reporting to show compliance with PSD determinations for the IGS Dense Pack modifications. All supporting documentation upon which this compliance report is based is available for review at the IGS site as required by rule and permit.

If you have any questions or need clarifications, please contact Mr. Jon P. Christensen, Superintendent of Technical Services at (435) 864-4414, or <u>jon-c@ipsc.com</u>.

In as much as this notice of intent may affect our Title V Operating Permit, I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Cordially,

George W. Cross

President and Chief Operations Officer & Title V Responsible Official

APC LPB/BP:jmj

**Enclosure: Computational Spreadsheets** 

cc: Blaine Ipson, IPSC

Herge W Cross

James Holtkamp, Holland & Hart

Nick C. Kezman, LADWP

**TABLE 1 - WEPCO Emission Test - IGS** 

Pollutant	Baseline Emissions (3/1/2000-2/28/2002	Post change Emissions (4/2008-3/2009)	Difference increase / (decrease)	PSD Significance
Nitrogen Oxides (w/OFA)	26,120	23,267	(2,853)	40
Nitrogen Oxides (w/o OFA)	26,120	24,327	(1,793)	40
Sulfur Dioxide	3,784	2,976	(808)	40
PM (Stack)	283	268	(15)	25
PM10 (Stack)	260	246	(14)	15
Ozone (VOCs)	11.8	13.7	1.9	40
Lead	.08	0.07	(0.02)	0.6
Beryllium	0.00087	0.00077	(0.00010)	0.0004
Mercury	0.079	0.084	0.005	0.1
Fluorides	10.4	12.5	2.1	3
Sulfuric Acid	8.0	10.7	2.7	7
Other sulfur compounds	62.4	67.8	5,4	10

NOTE: Values are in tons, and have been adjusted to disallow OFA benefits and to exclude emissions not attributable to the modifications. Baselines are shown on a hour equivalent basis. The table presents only those PSD pollutants reasonably expected to be emitted by IGS. Other sulfur compounds include total reduced sulfur and reduced sulfur compounds (TRS/RSC).

IPSC Reporting Year Summary Data

Sep-08 Dec-08 Mar-09	12 month ending		Jun-08 Sep-08 Dec-08 Mar-09	12 month ending		SO2 rolling 12 month totals	Jun-08 Sep-08 Dec-08 Mar-09	12 month ending		Jun-08 Sep-08 Dec-08 Mar-09	12 month ending	
2710 2675 26742	Actual SO2 Emissions		2707 2952 3017 3104	Actual SO2 Emissions		onth totals	12042 12386 12085 11894	Actual NOx Emissions		13640 13774 14243 13979	Actual NOx Emissions	
6.60E+13	Heat Input		6.99E+13 6.95E+13 7.20E+13 7.16E+13	Heat Input			6.65E+13 6.60E+13 6.61E+13 6.39E+13	Heat Input		6.99E+13 6.95E+13 7.20E+13 7.16E+13	Heat Input	
7,908 7,908 7,654	Operating t		8,416 8,372 8,647 8,604	Operating Hours			7,968 7,908 7,908 7,654	Operating Hours		8,416 8,372 8,647 8,604	Operating Hours	
37547 375491 37641	Inlet SO2 tons		37311 38983 40003 40845	Inlet SO2 tons			35640 37547 37491 37641	Inlet SO2 tons		37311 38983 40003 40845	Inlet SO2 tons	
1137	Effective 12mr inlet SO2 rate		1,068 1,122 1,112 1,140	Effective 12mr inlet 502 rate			1.071 1.137 1.134 1.178	Effective 12mr Inlet SO2 rate		1.068 1.122 1.112 1.140	Effective 12mr Inlet SO2 rate	
0.100	Representative BaselineSO2 rate	OWITTING	0,093 0,103 0,101 0,106	Representative BaselineSO2 rate	ONII ONE		0.451 0.458 0.458 0.463	Representative NOx rate		0.451 0.457 0.455 0.459	Representative NOx rate	
3021 3006 3138	Restructured SO2 Baseline		3016 3912 3357 3516	Restructured SO2 Baseline			13755 13869 13860 13553	Restructured NOx Baseline	INU	14586 14700 15145 15173	Restructured NOx Baseline	UNU
1149 1134	Excluded		1087 1393 1375 1544	Excluded Emissions			1290 1497 1488 1580	Excluded Emissions	OWT TWO	749 935 927 1027	Excluded Emissions	UNITONE
1560	Discou Actu Emissi		7 1620 3 1558 5 1642 4 1560	Discounted Actual Baseline Emissions (adjusted)			0 0.39003845 7 0.39561268 8 0.39537402 0 0.39907984	Non-OFA Predicted NOx Rate		9 0.38976668 5 0.39435265 7 0.39346076 7 0.39590926	Non-OFA Predicted NOx Rale	
1872	Base (adju		1929 1919 1982 1972	Baseline (adjusted)			12977 13065 13070 12754	Non-OFA Predicted NOx tons		3 13617 5 13700 6 14160 3 14180	Non-OFA Predicted NOx tons	
-311 -331	Actuals Difference from Baseline		-309 -361 -340 -412	Discounted Actuals Difference from Baseline			935 679 985 860	Difference from Actuals Discounted (Disallowed Actual Add-back) Emissions		200	Ditference from Actuals Discounted (Disalllowed Actual Add-back) Emissions	
ZZZ	PSD? (>40ton)		ZZZZ	PSD? (>40ton)			11687 11567 11582 11174			12892 12839 13316 13153		
							12465 12371 12371 12371 11973	Baseline (adjusted)		13837 13766 14217 14116	Baseline (adjusted)	
							=1713 =1483 =1775 -1659	Emissions difference from baseline		-945 -927 -902 -1194	Actual OFA Emissions difference from baseline	
							-778 -804 -790 -799	OFA Actuals Difference from Baseline		-945 -927 -902 -994	Discounted OFA Actuals Difference from Baseline	
							zzzz	PSD? (>40ton)		zzzz	PSD? (>40ton)	

### IPSC Reporting Year Summary Data

Stack PM rolling 12 month totals	12 month total	CO			UNIT ONE					
					OWI CHE				Actuals	
12 month ending	Actual PM	Heat Input	Effective	Operating Hours	Restructured Baseline	Discounted Emissions	Adjusted Actual Emissions	Baseline (adjusted)	Difference from Baseline	PSD? (>25ton)
Jun-08 Sep-08 Dec-08	124 128 147	6.98E+13 6.95E+13 7.20E+13	0.00354 0.00370 0.00410	8,416 8,372 8,647 8,604	115 119 136 149	0 0 0 0	124 128 147 161	183 182 188 187	-53 -40 -26	ZZZZ
					OWIT TWO					
10 month and in	Actual PM	Heat Input	Effective	Operating Hours	Restructured Baseline	Discounted	Adjusted Actual	Baseline (adjusted)	Actuals Difference from Baseline	PSD? (>25ton)
Jun-08 Sep-08	116 129	6.65E+13 6.60E+13	0.00348	7,968 7,908	106 118	18 0	110	100	115	ZZZ
Mar-09 125 Stack PM10 rolling 12 month totals	ng 12 month to	6.39E+13	0.00390	7,554	114	Ī	102	Š	i	
					UNIT ONE				Significan	
12 month ending	Actual PM10	Heat Input	Effective Emission Rate	Operating Hours	Restructured Baseline	Discounted Emissions	Adjusted Actual Emissions	Baseline (adjusted)	Actuals Difference from Baseline	PSD? (>15ton)
Jun-08 Sep-08 Dec-08	114 118 136	6.98E+13 6.95E+13 7.20E+13 7.16E+13	0.00326 0.00340 0.00377 0.00413		105 110 125 137	0000	114 118 136 148	168 167 173 172	-54.3 -48.9 -37.0 -23.8	2222
7 17 17 17 17 17 17 17 17 17 17 17 17 17					OWT TWO	0				
	Actual PM10		Effective		Restructured		Adjusted Actual		Difference from	PSD?
Burnus utdom 71	106	6.85E+13	0.00320	7.968	98		ſ			z
Sep-08	118			7,908		17		92	9.8	zz
Dec-08	119	6.61E+13	0.00359	7,908	105	16	6 98			z

Sep-08 Dec-08 Mar-09	12 month ending Emissions		Flouride rolling 12 month totals	Dec-08 Mar-09		month ending Emissi		Mercury rolling 12 month totals	Out-08 Sep-08 Dec-08 Mar-09	12 month ending Emissions		Lead rolling 12 month totals	Mar-09	Dec-08	Sep-08	12 month ending Emissions
6.1530 6.4773	ons H		totals	0.0434	0.0413	l Hg		totals	0.0310 0.0310 0.0352 0.0371	I Pb		tals	0.0004	0.0004	0.0003	al Be sions
8,372 8,372 8,647 8,604	Operating Hours			8,647 8,604	8,416 8,372	Operating Hours			8,416 8,372 8,647 8,604	Operating Hours			8,604	8,647	8,416 8,372	Operating Hours
5.3695 5.3417 5.5170 5.4894	Baseline (adjusted)	UNIT ONE		0.0418 0.0416	0.0406 0.0404	Baseline (adjusted)	UNIT ONE		0.0504 0.0501 0.0517 0.0515	Baseline (adjusted)	UNIT ONE		0.0006	0,0006	0.0006	Baseline (adjusted)
0.7924 0.8113 0.9603	Actuals Difference from Baseline			0,0016 0,0026	0.0006	Actuals Difference from Baseline			-0,0194 -0.0191 -0.0165 -0,0144	Actuals Difference from Baseline					-0.0002	Actuals Difference from Baseline
ZZZZ	PSD? (>3ton)			ZZ	zz	PSD? (>0.1ton)			ZZZZ	PSD? (>0.6ton)			z	Z	zz	PSD? (>0.0004ton)
5.8667 5.8486 5.9612	Actual HF Emissions			0.0399	0.0393 0.0392	Actual Hg Emissions			0.0289 0.0307 0.0311 0.0296	Actual Pb Emissions			0.0003	0 0004	0.0003	Actual Be Emissions
7,968 7,908 7,908	Operating Hours	U		7,908 7,654	7,968 7,908	Operating Hours B	-		7,968 7,908 7,908 7,908 7,654	Operating Hours					7,968 7,968	Operating H
5.0590 5.0590 5.0590	Baseline (adjusted)	OWT TIN		0.0383	0.0386 0.0383	Baseline (adjusted)	OWI TING		0.0321 0.0318 0.0318 0.0308	Operating Hours Baseline (adjusted)	OWT TING		0.0003	0.0003	0.0003	Baseline (adjusted)
0.7696 0.7896 0.9022	Actuals Difference from Baseline			0.0016	0.0007	Actuals Difference from Baseline			-0.0032 -0.0011 -0.0008 -0.0012	Actuals Difference from Baseline				0.0007		Difference from Baseline
ZZZ	PSD? (>3ton)			ZZ:	zz	PSD?			2222	PSD? (>0.6ton)			z	2 2	zz	PSD? (>0.0004 ton)

IPSC Reporting Year Summary Data

Beryllium rolling 12 month totals

### IPSC Reporting Year Summary Data

			UNIT ONE					UNIT TWO		
									Actuals Difference	
12 month ending	Actual H2SO4 Emissions	Operating Hours	Baseline (adjusted)	Actuals Difference from Baseline	PSD? (>7ton)	Actual H2SO4 Emissions	Operating Hours	Baseline (adjusted)	from Baseline	PSD? (>7ton)
lun-08	5 1514	8.416	4.1576	0.9938	z	8	7,968	3,9068	0.9928	z
Sep-08	5 3347	8.372	4,1361	1 1987	Z	5.0707		3.8776	1.1931	z
Dec-08	5.5375	8,647	4,2718	1,2657	Z	5.0937		3.8776	1.2161	Z
Mar-09	5.6577	8,604	4.2504		z	5,0751	7,654	3.7528	1.3223	z
Total Reduced Sulfur / Reduced Sulfur Compounds (TRS/RSC) rolling 12 month totals	ılfur / Reduceo	Sulfur Con	npounds (TF	RS/RSC) rolling	12 month	totals				
			UNIT ONE					UNIT TWO	No.	
	Actual TRS/RSC	Operating	Baseline	Actuals Difference	PSD?	Actual TRS/RSC			Difference from	PSD?
12 month ending	Emissions	Hours	(adjusted)	from Baseline	(>10ton)	Emissions	Operating Hours	Baseline (ad	Baseline	(>10ton)
Jun-08	34.9354	8,416	32.3683	2.5670	Z	33.2705	7,968		2.7705	z
Sep-08	34.7417	8,372	32.2010	2,5407	z	33.0246		30.2722	2,7524	z
Dec-08	35.9884	8,647	33.2578	2,7307	ZZ	33.0575	7,908	30.2722	2,7853	2 Z
INIGIT-00				-						
Ozone (Volatile Organic Compounds) rolling 12 month totals	rganic compo	ounds) rollin	UNIT ONE	totals				OWIT TINO		
									Actuals	8
	Actual VOC	Operating	Baseline	Actuals Difference	PSD?	Actual VOC			from	PSD?
12 month ending	Emissions	Hours	(adjusted)	from Baseline	(>40ton)	Emissions	Operating Hours	Baseline (adjusted)	Baseline	(>40ton)
Jun-08	6.7882	8,416	6.1330		z	6.4631			0.6887	z
Sep-08	6.7785	8.372	6.1013	0.6772	z	6.4427		5,7312	0.7115	Z
Dec-08	7.1278	8,647	6.3015		z	6.5617			0.8304	zz
Mar-09	7 2493	8 604	6 2700	0 9793	z	6.4977	7 654	5.5468	0.9509	Z

# WEPCO COMPLIANCE SUMMARY

1	37475		
Adj. Emissic	Adj. Baseline	(tons)	(PSD)
OTINU		WEPCO Trigger	Pollutant
	March-2009	For the Period ending:	
		emission)	(12 month rolling total emission,

Ful	For the renot entire.	MICH CHI-EVON		
Pollutant	WEPCO Trigger		UNIT ONE	
(PSD)	(tons)	Adj. Baseline	Adj. Emissions	WEPCO Met? (Y/N)
NOx (w/OFA)	40	14146	12953	Υ
NOx (w/o OFA -projected)	40	14146	13153	Υ
SOx (300 00 10 10 10 10 10 10 10 10 10 10 10 1	40	1972	1560	Υ
PM (stack)	25	187	161	Υ
PM <sub>10 (Stack)</sub>	5	172	148	Y
VOC (ozone)	40	6.3	7.2	Υ
Pad	0.6	0.05	0.04	Y
Bervlium	0.0004	0.00059	0.00044	Υ
Mercury	0.1	0.042	0.044	Υ
Florrides	<sub>ل</sub> ى	5.5	6.6	Y
Sulfuric Acid	7	4.3	5.7	Υ
TBS/BSC	10	33.1	35.8	\ \

Beryllium Mercury Flourides Sulfuric Acid TRS/RSC

	OWT TWO	
Adj. Baseline	Adj. Emissions	WEPCO Met? (Y/N
11973	10314	Υ
11973	11174	Υ
1811	1416	Υ
96	107	Υ
89	86	Υ
5.5	6.5	Υ
0.03	0.03	Υ
0.00028	0.00034	Y
0.037	0.040	Y
4.9	6.5	Y
3.8	5.1	Y
29.3	32.0	<b>→</b>

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	2.54E+54 2.77E-01 .36E-02 .36E-02 .36E-02 .47E-02 .06E-02 .156E-02 .156E-02 .156E-02 .156E-02 .156E-02	Mark Ingel (old)	2:12L=2; 2:18L=2; 3:56E=2; 3.4NE=2; 8:51E+2; 8:51E+2; 1:54E=2; 1:54E=2; 1:42E=2;	Head Ingrad (gill)
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	0.000 0.000	PART NOCAS	0.000000000000000000000000000000000000	10 (S)

## BASELINE WEPCO DATA

WEPCO Compliance Baseline Period:

March 1, 2000 to February 28, 2002

per hour rate 7692321075	lb/mmbtu	Total 1.27E+14	per hour rate	lb/mmbtu
7692321075		1.27E+14	7656001091	
1032021010			1000001001	
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### INTERMOUNTAIN GENERATING STATION EMISSION FACTOR FACT SHEET

SOURCE	EMISSION FACTOR	UNITS / Formulae	Source / Table	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Other DM DD Ton 1		lb/mmbtu	Stack Test	0.0049 0.0073	073	0.0030	0.0033	0.00040	П	0.0030 0.0031		0.0037	0.0053
Stack PM EF. Unit 2		lb/mmbtu	Stack Test	0.0034 0.0037	0037	0.0024	0.0032	7C00 D	Г	0.0000 0.0000	0.0024	Colonia Col	0,000
Stack VOC (coal) Commutative AP42	0.004292	lbs/ton	AP-42 1,1-13										
Stack VOC (mail Cumulative EPRI	8.2	lb/10^12 btu	EPRI Trace SubstancesReport										
Stack VOC (oil) Cummutative AP42	0.2	lb/1000gal	AP-42 1.1-13										
Stack, VOC (oil) Cummulative EPRI	31	lb/10^12 btu	EPRI Trace SubstancesReport	200	200		2011	0 40	0.41	0 41	0.43	0.43	0.45
Stack, Be (coal)	1.2"(C/A*PM)^1.1	1b/10^12 btu	AP-42 1.1-15	0,38	0.08	6.4	n -						
Stack, Pb (coal)	3.4*(C/A*PM)Y0.80	Ib/10^12 btu	AP-42 1.1-15	Т	0.0	2000	20.00		0.0	0	0.0	0.0	0.06
Stack, Hg (coal) Control Efficiency	76.9	%	Source esting	Т	0.000	0.000	n o						
Stack, F (coal) Control Efficiency	97	%	EPRI Trace SubstancesReport	8.0	100	90	92						
Stack, Be (Oil)	0.2	lb/10^12 blu	EPRI Trace SubstancesReport										
Stack, Be (oil) Control Efficiency	30	6/6	EPRI Trace SubstancesReport										
Stack Pb (oil)	7	lb/10^12 btu	EPRI Trace SubstancesReport										
Stack Pb (pii) Control Efficiency	30	%	EPRI Trace SubstancesReport										
Stack Ho (oil)	0.46	1b/10^12 btu	EPRI Trace SubstancesReport										
Stack Ho (Control Efficiency)	76.9	96	Source Testing										
Stack, H2SO4 (coal)	6,45986	lb/ton	Source Testing										
Stack H2SO4 Control Efficiency	92.02	%	Source Testing										
Stack, H2SO4 (oil)	0.00245	lb/gal	So Co Paper										
Stack, TRS/RSC	0,001	lb/mmbtu	Eng. Calc										
Stack SS&M (PM10)	0.42	lbs/ton	AP42 T1:1-6										
Stack SS&M (PM)	0.6	lbs/ton	AP42 [1.1-6										
Stack SS&M (PM10)	71	%	AP42 11:1-6										

NOx relationship to Fuel Quality (Baseline)

0.1091x + 0.3341 0.0848x + 0.2992 0.0817x<sup>2</sup> 0.0728x<sup>2</sup>

> Plant NOx Basis Worksheet Plant NOx Basis Worksheet

b/mmbtu

U1 SO2 Basis Worksheet
U2 SO2 Basis Worksheet

U1 SO2 relationship to Fuel Quality
U2 SO2 relationship to Fuel Quality

### INTERMOUNTAIN GENERATING STATION Analysis Protocol

Refer to the following groups for description of general column headings in each WEPCO worksheet.

This protocol overnow is provided to ensure consistency and validation in the following areas:

1. Input Data
2. - Production & Emission Calculations
3. - WEPCO Analysis; Actuals to Actuals comparison, and adjusting for increases not attributable to the modifications.

Data Used	Data Sources
Fuel Throughput - Coal	Calibrated feeders located at each mill. Adjusted annually based upon coal stochalle inventory analysis.
Fuel Throughput - Fuel Oil	Flowmetars for each unit.
Fuel Quality - Coal HHV	ASTM Sampling and Laboratory Analysis - As fired
Fuel Quality - Coal ASH	ASTM Sampling and Laboratory Analysts - As fired
Fuel Quality - Coat Sulfur	ASTM Sampling and Lattoratory Analysis - As fixed
Fuel Quality - Coal Trace Elements	ASTM Sampling and Laboratory Analysis - As fired
Fuel Cuality - Oi HHV	ASTM Sampling and Laboratory Analysis - As fired
Fuel Quality - Oil Density	ASTM Sampling and Laboratory Analysis - As fired
Fuel Quality - Oil Sulfur	ASTM Sampling and Laboratory Analysis - As fired
Startup, Shutdown, & Malfunction Emissions	Obtained from excess emission reports made to UDAO, utilizing AP-A2 factors for uncontrolled sources.
Operating Hours	Roller operaling data obtained from 40 CFR Part 75 CEMS EDR
Inlet Sulfur Pate	Actual CEM measurement taken at sorubber inlet pursuant to 40 CFR Part 50 requirements
Outlet Sultur Emissions	Actual CEM measurement taken at stack pursuant to both 40 CER Pair 60 and Plant 75 requirements
NOx Rate	Actual CEM measurement taken at stack pursuant to both 40 CFR Part 60 and Part 75 requirements
PM Emission Rate	From annual 40 CFR Part 60 App A Method 58 stack testing

The state of the s	
SS&M PM and PM10 Excess Emissions	Utilizing AP-42 & SS&M emissions (in pounds), converted to tons
Heat Input	Multiplies fuel qualify (HHV) by proughput, and conversion factors
Inlet Sulfur Tonnage	Multiples inlet suffur rate by heat input, and conversion factors
NOx emissions in toris	Multiplies NOx emission rate by heat input, and conversion factors
PM emissions in tons	Multiplies PM emission rate by heat input, and conversion factors
PM10 emissions in form	Multiplies PM10 emission rate by heat input, and conversion factors
Se emission factor	Calculated with AP-42 (cost) or EPRI's Trace Substance Report (oil), using trace concentration and eath content.
Be anissions	Utilizes Be emission factors and theat input, and conversion factors
Pb emission lactor	Calculated with AP-42 (coal) or EPRI's Trace Substance Report (oil), using trace concentration and ash content.
Pb emissions	Utilizes Pb emission factors and heat input, and conversion factors
Hg emissions	Utilizes control efficiencies determined by stack testing
Floundes/HF emiss-crs	Calculated utilizing EPRI's Trace Substance Report and trace concentration, and conversion factors
H2SO4 emissions	Utilizes control efficiencies determined by stuck testing, and conversion rates biased upon So. Co.'s paper
TRS/RSC sulfur compound emissions	Uses a factor derived on the basis of AP-42 Table 1.1-3, Footnois (b).
ACC a	Using a summation of individual VOC specific emission factors from both AP-42 and EPRI's Trace Substance Report to resolve a single cummulative EF, multiplining litter two uphout or healt input, and conversion factors.

WEPCO Analysis	Description
Actual emissions	Summation of 12 failing months of emissions calculated on the PODUCTION DATA worksheet.
Heat Input	Summation of 12 rolling months of heat input calculated on the PRODUCTION DATA worksheet.
Operating hours	Summation of 12 rolling months of hours calculated on the PRODUCTION DATA worksheet.
inlet SQ2 tonnage	Summation of 12 rolling SQ2 tone to the scrubber intel calculated on the PRODUCTION DATA workshaet.
Effective 12 month SO2 Inlet rate	Derived from dividing 12 month inlet termane by 12 month heat rate.
Representative rate	Represents rate predicted to have occurred during baseline if this period's fuel was utilized. Based upon historical operating and emissions data
Restructured Baselina	paseline purind heat
Excluded emissions	Difference between the actual baseling and the restructured baseline, indicating ren-mod emission increases that doubt be accommodated during baseline period.
Non-OFA Predicted Bate	- 1
Non-OFA Predicted emissions	Expected emissions without the benefit of OFA, multiplying predicted rate by actual heat input.
Non-OFA Emission difference from actual	This is the calculated benefit from GFA which must be discounted to show WEPCO compliance for the Dense Pack Project.
Discounted actual emissions	Emissions to which the WEPCO test applies, which discounts any OFA benefit, and excludes increases not authoutible to the modification.
Baseline (adjusted)	The basis to which the WEPCO test compares, utilizing the usseline emission rate, adjusted to hours of operation.
Discounted Ditterence	The difference between WEPCO period emissions and Baseline period emissions.
PSD?	An IF statement argument that compares the difference against the PSD stanficance level